

**Translation**

**PATENT COOPERATION TREATY**

**PCT**

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>8696 WO GEB-RU</b>		FOR FURTHER ACTION	See Form PCT/IPEA/416
International application No. <b>PCT/EP2004/006122</b>	International filing date (day/month/year) <b>07.06.2004</b>	Priority date (day/month/year) <b>04.07.2003</b>	
International Patent Classification (IPC) or national classification and IPC <b>F16H3/08</b>			
Applicant <b>ZF FRIEDRICHSHAFEN AG</b>			

<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>6</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (sent to the applicant and to the International Bureau) a total of <u>3</u> sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>	
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>	

Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2004/006122

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
  - ☐ This report is based on translations from the original language into the following language \_\_\_\_\_ which is the language of a translation furnished for the purposes of:
    - ☐ international search (Rule 12.3 and 23.1(b))
    - ☐ publication of the international application (Rule 12.4)
    - ☐ international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
  - ☐ the international application as originally filed/furnished
  - ☒ the description:
    - pages 1-14 \_\_\_\_\_ as originally filed/furnished
    - pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
    - pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
  - ☒ the claims:
    - nos. \_\_\_\_\_ as originally filed/furnished
    - nos.\* \_\_\_\_\_ as amended (together with any statement) under Article 19
    - nos.\* 1-6 \_\_\_\_\_ received by this Authority on \_\_\_\_\_
    - nos.\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
  - ☒ the drawings:
    - sheets 1/5-5/5 \_\_\_\_\_ as originally filed/furnished
    - sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
    - sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
  - ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
  - ☐ the description, pages \_\_\_\_\_
  - ☐ the claims, nos. \_\_\_\_\_
  - ☐ the drawings, sheets/figs \_\_\_\_\_
  - ☐ the sequence listing (*specify*): \_\_\_\_\_
  - ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
  - ☐ the description, pages \_\_\_\_\_
  - ☐ the claims, nos. \_\_\_\_\_
  - ☐ the drawings, sheets/figs \_\_\_\_\_
  - ☐ the sequence listing (*specify*): \_\_\_\_\_
  - ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2004/006122

**Box No. V** Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims	1-6	YES
	Claims		NO
Inventive step (IS)	Claims	1-6	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-6	YES
	Claims		NO

## 2. Citations and explanations (Rule 70.7)

Prior art cited in the search report:

D1: DE 101 31 329 A

D2: DE 44 16 930 A

D3: DE 35 21 932 A.

**Independent claim 1****Novelty**

Document D1, acknowledged by the applicant in the description, discloses (the references in parentheses are to said document):

*a multi-gear power shift transmission for construction machinery, in particular for excavator loaders and telehandlers, said transmission comprising a torque converter (2),*

*an input shaft (3),*

*an output shaft (4) and*

*a plurality of mutually spaced countershafts (5, 6, 7, 8 and 9),*

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*the shafts being provided with idler gear wheels, fixed gear wheels and clutch elements (11, 15, 18 and 21), forming a plurality of countershaft units for shifting gear and changing direction, comprising four forward gears and two reverse gears, the output shaft (4) also being used as a countershaft for one gear, the gear wheels of one countershaft (6) corresponding to a forward gear unit and the gear wheels of one further countershaft (9) corresponding to a further forward gear unit meshing with the gear wheels of the input shaft (3), and both these countershafts (6, 9) being rotatable, in any desired angular position, about the input shaft (3).*

The subject matter of the present claim 1 differs therefrom:

*in that further countershafts (4, 6) corresponding to the gears are arranged one behind the other, relative to the input shaft (3), on one side of said input shaft (3) and in that each of the further countershafts (4, 6) corresponding to the gears is rotatable through a large angle sector about the countershaft that is closest in the direction of the input shaft (3), the further countershafts (4, 6) corresponding to the gears each being rotatable about the countershaft of the gear wheel immediately upstream.*

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The present application therefore satisfies the requirements of PCT Article 33(2) since the subject matter of the single independent claim, claim 1, is novel in relation to the prior art as defined in the Regulations (PCT Rule 64.1 to 64.3).

### **Inventive step**

The problem addressed by the present invention can consequently be regarded as that of devising a multi-gear power transmission which is of a versatile design.

The solution to the above problem, as proposed in claim 1 of the present application, does not appear to be known from any of the searched documents *per se*, nor does it appear to be rendered obvious by the prior art in its entirety.

In consequence, the present application appears to satisfy the requirement of PCT Article 33(3) since the subject matter of claim 1 appears to involve an inventive step (PCT Rule 65.1 and 65.2).

### **Industrial applicability**

The subject matter of claim 1 also appears to satisfy the requirements of PCT Article 33(4) since it can be made at least in the field of motor vehicle engineering.

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Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statementClaims dependent on claim 1

The subject matter of dependent claims 2-6 relates to further embodiments of the invention according to claim 1 and said claims appear likewise to satisfy the requirements of PCT Article 33(2) to (4).